

**REMARKS**

Claims 25-47 are currently pending in the application.

**CLAIM OBJECTIONS**

Claims 32 and 35 stand as objected to because it is the Examiner's position that these claims have the following informalities:

Claims 32 (line 2) and 35 (line 2) recite "polymer dispersion (latex)". Use of parenthesis in the claim to define a limitation in an alternative manner is not recommended under current U.S. practice.

**Claims 32 and 35 have been amended as suggested by the Examiner.**

Claims 33-34 stand as objected to for having different punctuation marks i.e. ",;" for separating the Markush grouping.

**Claims 33 and 34 have been amended as suggested by the Examiner.**

Claims 32, 34, 37-38 stand as objected to for having an improper Markush grouping.

**Claims 32, 34, and 37-38 have been amended as suggested by the Examiner.**

Claims 36-41 stand as objected to under 37 CFR 1.75(c). It is the Examiner's position that these claims are of improper dependent form for failing to further limit the subject matter of a previous claim. The Examiner notes that the Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

**Claim 36 has been re-written in independent format, as suggested by the Examiner.**

Claim 38 stands as being objected to for depending from Claim 36 due to the objections relating to Claim 36.

**As Claim 36 has been amended to overcome the objections thereto, Claim 38 should no longer be subject to objection.**

#### **REJECTIONS UNDER 35 USC §102/103**

Claims 44 and 46-47 stand as rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Betremieux et al. (US 6,054, 526). It is the Examiner's position that Betremieux et al. ('526) disclose latex which results from the polymerization of a mixture of hydrophobic monomers composed of styrene and (meth)acrylic esters to produce an emulsion in an aqueous solution of a water-soluble amphiphilic copolymer (abstract). The hydrophobic monomers undergoing polymerization in the amphiphilic oligomer solution may be either styrene or the derivatives thereof, a (meth)acrylic ester or a mixture of these monomers (column 2, lines 32-37).

The Examiner further notes that the amphiphilic oligomer is preferably a copolymer of one or several hydrophobic monomers from the group comprising isobutylene or the derivatives thereof, and (meth)acrylic esters, and one or several hydrophilic monomers from the group comprising (meth)acrylic acid and maleic anhydride. See example 2, wherein the latex is formed from styrene and butyl acrylate while the amphiphilic oligomer is composed of styrene and maleic anhydride.

The Examiner states that the fineness of the dispersion of the composite latexes makes them highly prized in various fields in which effective impregnation of a substrate and a degree of water-repellency are required: paints for concrete, cement, plaster, tiles. The Examiner references the specification of the invention noting that it also concerns solvent-free paints which incorporate these composite latexes as film-forming auxiliaries (column 3, lines 24-39).

#### **The Applicants respectfully traverse the Examiner rejection over the '526**

**Reference.** Claim 44 is reproduced below:

44. A mineral binder composition, the surface of which is at least partly covered with a film resulting from the drying of a composition comprising an aqueous film-forming polymer emulsion and at least one water-soluble amphiphilic copolymer, said water-soluble amphiphilic copolymer being selected from the group consisting of:
- (i) at least one polymer obtained by the polymerization

of at least one ethylenically unsaturated monomer (I) of monocarboxylic or polycarboxylic acid, or else a precursor of carboxylic acids of anhydride, whether aliphatic, cyclic, linear or branched, and  
of at least one linear or branched, mono-ethylenically unsaturated hydrocarbon monomer (II), this hydrocarbon monomer not being aromatic;  
(ii) at least one polymer coming from the polymerization of at least one monocarboxylic or polycarboxylic acid monomer (I), or anhydride, whether aliphatic, cyclic, linear or branched, which is ethylenically unsaturated and includes at least one hydrophobic, saturated or unsaturated, C<sub>4</sub>-C<sub>30</sub> hydrocarbon grafted species, optionally interrupted by one or more heteroatoms, this hydrophobic grafted species not being aromatic; and  
(iii) at least one polymer obtained by chemical modification of a precursor polymer comprising, on the one hand, sites on which a hydrophobic species can be grafted, this hydrophobic grafted species not being aromatic and comprising, moreover, carboxylic acid units or carboxylic acid precursors.

[Emphasis added.]

The polymers taught in the '526 reference do not meet any of the three alternative elements of Claim 44 (i or ii or iii). Ignoring the preferred embodiments taught by the '526 reference for the moment, consider the two broadest teachings within the '526 reference. The first is disclosed in the section set forth at column 2, lines 32-37 and cited by the Examiner:

In these systems, the hydrophobic monomers undergoing polymerization in the amphiphilic oligomer solution may be either styrene or the derivatives thereof, a (meth)acrylic ester, including fluorinated monomers derived from the esterification of (meth)acrylic acid using a perfluorinated alcohol, or a mixture of these monomers.

Stated another way, the latex polymers of the '526 reference are prepared by polymerizing:

- 1) Styrene or a Styrene derivative;
- 2) A (meth)acrylic ester, including fluorinated monomers derived from the esterification of (meth)acrylic acid using a perfluorinated alcohol; or
- 3) A mixture of Styrene or a Styrene derivative and a (meth)acrylic ester, including fluorinated monomers derived from the esterification of (meth)acrylic acid using a perfluorinated alcohol.

Clearly, none of these polymers are within the scope of Claim 44. Element (i) requires that the polymer be prepared from an acid or an anhydride and a non aromatic unsaturated hydrocarbon. Element (ii) must be the polymerization product of an acid (or poly acid) or anhydride with a C<sub>4</sub>-C<sub>30</sub> unsaturated hydrocarbon. Element (iii) requires that a first polymer be prepared and then

be modified using a non aromatic hydrophobic species. Since styrene is aromatic and a (meth)acrylic ester is not an acid or anhydride, clearly none of the elements of Claim 44 are disclosed or taught by the '526 reference.

The Examiner also references the amphiphilic oligomers in the '526 reference. In '526, the hydrophobic monomers are polymerized in the presence of the amphiphilic oligomers. For the '526 reference to disclose an embodiment that is within the scope of Claim 44, then it is necessary to examine the possible interactions of polymerizing the '526 hydrophobic monomers in the presence of the oligomers and compare that to element (iii) of Claim 44 (because neither element (i) nor (ii) would even be close).

Assuming that the amphiphilic oligomers can be the precursor polymer of element (iii), an issue not conceded by the Applicants, then the '526 hydrophobic monomers would have to meet the other criteria of element (iii) and they do not do so. Element (iii) of Claim 44 requires that the hydrophobic grafted species not be aromatic and comprise, "moreover, carboxylic acid units or carboxylic acid precursors" and clearly the styrenics and esters disclosed in '526 are neither. The carboxylic acid precursors are anhydrides as taught in paragraph [0041]. The esters disclosed in '526 are neither carboxylic acids nor anhydrides. The styrene and styrene derivatives are aromatic. No combination of the amphiphilic oligomer and the hydrophobic monomers of '526 meets the limitations of or are within the scope of Claim 44.

Since none of the three alternative elements of Claim 44 are disclosed in '526, then clearly '526 does not anticipate Claim 44 or any claim that depends from Claim 44 of the present application.

**Claim 44 is also not obvious over the '526 reference.** The '526 reference teaches, generally, preparing a latex by polymerizing one or more monomers in the presence of an amphiphilic oligomer to form a composite latex (Column 1, line 50). The polymers claimed in Claim 44 of the application are an additive which is admixed into an extant latex. The '526 reference is heavily biased towards styrene, while the polymer of Claim 44 generally avoids aromatic components.

One of ordinary skill in the art would not be motivated to replace the esters disclosed in the '526 reference with acids and anhydrides and then also avoid the preferred aromatic embodiments of the '526 reference, in order to arrive at the invention disclosed in Claim 44. It

follows then, that Claim 44 and the claims that depend from Claim 44 are not obvious over the '526 reference.

#### **REJECTIONS UNDER 35 USC §103**

Claims 25, 27-43 stand as rejected under 35 U.S.C. 103(a) as being unpatentable over '526 in view of Schwartz, et al. (US20010007711). The Examiner cites '526 as disclosing a latex which results from the polymerization of a mixture of hydrophobic monomers composed of styrene and (meth)acrylic esters to produce an emulsion in an aqueous solution of a water-soluble amphiphilic copolymer as noted in the §102 discussion above.

The Examiner notes that '526 is silent with respect to a method of applying the coating to mineral binder; wt% of amphiphilic copolymer and mineral binders such as fly ash. It is for this purpose that the Examiner cites Schwartz et al. ('711) as teaching a method of coating a concrete molding; and a process for producing mineral coatings on concrete roof tiles. The Examiner further notes the disparity with regard to the amount of the copolymer used in '526 and the present invention, but states that the choice of a particular amount of amphiphilic copolymer (such as the amount in present claims) is a matter of routine experimentation and would have been well within the skill level of, and thus obvious to, one of ordinary skill in the art.

The Applicants respectfully traverse the Examiner's rejection of Claims 25 and 27-43 over '526 in view of '711. The Applicants' comments regarding the differences between the limitations in Claim 44 and the '526 reference are also applicable to Claims 25 and amended Claim 36, the dependent claims within this rejection. In brief, the water soluble amphiphilic copolymer of the independent claims is neither disclosed nor obvious in view of the '526 reference. The independent claims each have a limitation that the copolymer be prepared using at least one polymer selected from claim elements (i), (ii), and (iii). To avoid prolixity, the entirety of the earlier arguments will not be repeated but the Applicants ask that they be treated as repeated here. None of the embodiments disclosed by the '526 reference are within the scope of these claim elements.

Also, as the Examiner noted, the additives of the present application may be used in lower concentration as compared to that taught in the '526 reference. Note that in the Examples, the additive of the present application is added at a concentration of about 1 percent and yet

outperforms copolymers having, for example, a greater aromatic content similar to the compositions disclosed in the '526 reference.

The composite latex of the Examiner's '526 reference is quite different from the water soluble amphiphilic copolymer. The composite latex is prepared by copolymerizing the hydrophobic monomers in the presence of amphiphilic oligomer. In marked contrast, the independent method Claims 25 and 36 of the present application have a requirement that "a sufficient quantity of at least one water-soluble amphiphilic copolymer is added to [an] aqueous film-forming polymer dispersion."

The '711 reference, while disclosing the use of a coating for concrete molding, does not disclose or suggest the additives claimed in the present application.

Because of these differences, the present invention as claimed in Claims 25 and 36 as compared to '526 in view of '711 would not have been obvious to one of ordinary skill in the art, Claims 25 and 27-43 are not obvious in view of '526 and '711.

Claims 25 and 27-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over '711 in view of '526. The Examiner cites '711 as disclosing a method for coating a concrete molding which comprises application of at least one plastic composition wherein the said plastic composition comprises at least one aqueous polymer dispersion (abstract).

The Examiner further states that the aqueous polymer dispersion of the '711 reference is selected from the polymer built from ethylenically unsaturated monomers M, embracing from 90 to 99.9% by weight of at least one hydrophobic, monoethylenically unsaturated monomer M1, selected from styrene, butadiene, C1-C4 alkyl esters of methacrylic acid and the C2-C12 alkyl esters of acrylic acid and from 0.1 to 10% by weight of at least one hydrophilic, monoethylenically unsaturated monomer M2 embracing up to 2% by weight of one or more monoethylenically unsaturated monomers having at least one acid group (paragraph 0015-0018).

As the Examiner notes, the '711 reference is silent with respect to amphiphilic copolymer and its weight percent.

The Examiner cites the '526 reference as disclosing amphiphilic copolymers that anticipate or render obvious the additives claims in the present applications and states that it would have been obvious to replace the surfactants of '711 with amphiphilic copolymers of '526.

**The Applicants respectfully traverse the Examiner's rejection of Claims 25 and 27-43 over '711 in view of '526.** The additives claimed in Claims 25 and 36 are different and not obvious in view of the '526 reference. The independent claims each have a limitation that the copolymer be prepared using at least one polymer selected from claim elements (i), (ii), and (iii). To avoid prolixity, the entirety of the earlier argument will not be repeated but the Applicants ask that they be treated as repeated here. None of the embodiments disclosed by the '526 reference are within the scope of these claim elements.

While the '711 reference does teach a method of coating concrete, it does not teach using the additives claimed in Claims 25 and 36 of the present application. The '526 reference does not teach or suggest the additives of Claims 25 and 36. It follows then that Claims 35 and 27-43 are not obvious over '711 in view of '526.

**Claims 26 and 45 stand as rejected under 35 U.S.C. 103(a) as being unpatentable over '711 in view of Zuckert, et al. (EP 305795A2).** The Examiner cites '711 for the same reasons as in the prior rejection. The Examiner acknowledges that '711 is silent with respect to graft polymers made by esterification.

The Examiner cites Zuckert, et al. ('795), as teaching graft polymers which can be obtained by grafting the monomers onto the fatty acid polyol ester or by esterifying the fatty acid graft polymer using polyols. The emulsions are suitable for air drying, water dilutable paints and road marking paints. They are distinguished by fast surface drying and good film properties (abstract). The Examiner concludes, therefore, that it would have been obvious to add the graft polymer of '795 to the aqueous polymer dispersion of Schwartz et al.

**The Applicants respectfully traverse the Examiner's rejection of Claims 26 and 45 over '795 in view of '711.** Both claims 26 and 45 have, through dependency, a limitation of:

A method for depositing and forming a film coming from an aqueous film-forming polymer dispersion on a surface based on a mineral binder composition while it is still wet, wherein a sufficient quantity of at least one water-soluble amphiphilic copolymer is added to said aqueous film-forming polymer dispersion[.]

The method of the present application is limited to the use of an additive within a film forming polymer dispersion. Also, the polymer dispersion is used to prepare a film on a mineral binder composition such as concrete. The '795 reference is directed to paints, particularly paints for use

on roads. One of ordinary skill in the art would be aware of the very different properties of asphalt and mineral binders such as concrete. One of ordinary skill in the art would not be motivated to use a binder for paints as an additive to facilitate the coating of a mineral binder.

It follows that Claim 26 and 45 are not obvious over ‘795 in view of ‘711.  
Reconsideration of the above-identified application in view of the amendments above and remarks below is respectfully requested.



## CONCLUSION

For all the foregoing reasons, Applicant submits that the application is in a condition for allowance. The Commissioner is hereby authorized to charge a two-month extension of time for responding to the Office Action Dated January 23, 2008. Additionally, the Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 501863.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'G. L. Tyler', written over a horizontal line.

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